UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/618,900 | 07/14/2003 | Akira Shimizu | ASMJP.126AUS | 7366 |

20995 7590 10/19/2006

KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

| EXAMINER | |
|---|---|
| ZERVIGON, RUDY | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1763 | |

DATE MAILED: 10/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/618,900 | SHIMIZU ET AL. | |
| | Examiner | Art Unit | |
| | Rudy Zervigon | 1763 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *03 August 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-11 and 22-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11 and 22-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 August 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-7, 9-11, and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayakawa et al (USPat. 5,447,568) and Lee; Hideki (US 5,785,796 A) in view of Kajita; Akihiro et al. (US 5953634 A). Hayakawa teaches a single-wafer (3005; Figure 10; column 11, lines 41-66)-processing type CVD apparatus (Figure 10, 11; column 11, line 41 - column 12, line 38) for forming a thin film on an object (3005; Figure 10; column 11, lines 41-66) to be processed, which comprises: a reaction chamber (3006; Figure 10; column 11, lines 41-66), a susceptor (3004; Figure 10; column 11, lines 41-66) for placing said object (3005; Figure 10; column 11, lines 41-66) thereon, which is provided inside said reaction chamber (3006; Figure 10; column 11, lines 41-66); a shower plate (3502; Figure 14; column 14, lines 1-47) for emitting a jet of reaction gas (3101; Figure 10; column 11, lines 41-66) to said object (3005; Figure 10; column 11, lines 41-66), which is disposed parallel and opposing to said susceptor (3004; Figure 10; column 11, lines 41-66); an orifice (3601; Figure 10; column 11, lines 41-66) for bringing a liquid raw material (3101; Figure 10; column 11, lines 41-66) for deposition and a carrier gas (3002; Figure 10; column 11, lines 41-66) into said reaction chamber (3006; Figure 10; column 11, lines 41-66), which is formed through a ceiling (Figure 14; column 14, lines 1-47) of said reaction chamber (3006; Figure 10; column 11, lines 41-66); an evaporation plate (3306, Figure 10,11,14; column12, lines 3-59; column 14, lines 1-47) for vaporizing said liquid raw material (3101; Figure 10; column 11, lines 41-66), which is disposed in a space between said ceiling

(Figure 14; column 14, lines 1-47) of said reaction chamber (3006; Figure 10; column 11, lines 41-66) and said shower plate (3502; Figure 14; column 14, lines 1-47); said evaporation plate (3306, Figure 10,11,14; column12, lines 3-59; column 14, lines 1-47) having an orifice (3601; Figure 10; column 11, lines 41-66) and a temperature controller (4000; Figure 10; column 11, lines 41-66) for said evaporation plate (3306, Figure 10,11,14; column12, lines 3-59; column 14, lines 1-47) at respective given temperatures (column 13, lines 35-45) – claim 1

Hayakawa further teaches:

i. The apparatus (Figure 10, 11; column 11, line 41 - column 12, line 38) as claimed in claim 1, wherein the given temperature of said evaporation plate (3306, Figure 10,11,14; column12, lines 3-59; column 14, lines 1-47) is within the range of 40°C. to 300°C (column 13, lines 35-45), as claimed by claim 3

ii. The apparatus (Figure 10, 11; column 11, line 41 - column 12, line 38) as claimed in claim 1, wherein said temperature controller (4000; Figure 10; column 11, lines 41-66) comprises one or more heaters (3307, 4002; Figure 11) which are arranged adjacently to said evaporation plate (3306, Figure 10,11,14; column12, lines 3-59; column 14, lines 1-47) and to said shower plate (3502; Figure 14; column 14, lines 1-47), temperature detectors (4001; Figure 11) which are respectively linked to said evaporation plate (3306, Figure 10,11,14; column12, lines 3-59; column 14, lines 1-47), a temperature regulator (4000; Figure 10) which is linked to said heater (3307, 4002; Figure 11), and said temperature detectors (4001; Figure 11) – claim 5

iii. The apparatus (Figure 10, 11; column 11, line 41 - column 12, line 38) as claimed in claim 1, wherein said liquid raw material (3101; Figure 10; column 11, lines 41-66) is a

solution wherein a metal complex raw material or a solid raw material used for deposition is dissolved in a solvent, as claimed by claim 6 – Applicant's designation of the raw material gas in a recitation of intended use of the claimed apparatus claims. It is well established that apparatus claims must be structurally distinguished from the prior art (In re Danley, 120 USPQ 528, 531 (CCPA 1959). "Apparatus claims cover what a device is, not what a device does ."(emphasis in original) Hewlett - Packard Co . v. Bausch & Lomb Inc ., 15 USPQ2d 1525, 1528 (Fed. Cir. 1990), MPEP – 2114). Further, a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Exparte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

iv. The apparatus (Figure 10, 11; column 11, line 41 - column 12, line 38) as claimed in claim 1, wherein said carrier gas (3002; Figure 10; column 11, lines 41-66) is an inert gas (column 7; lines 1-3), as claimed by claim 7

v. The apparatus (Figure 10, 11; column 11, line 41 - column 12, line 38) as claimed in claim 1, wherein the evaporation plate (3306, Figure 10,11,14; column12, lines 3-59; column 14, lines 1-47) is a hollow plate having an upper plate (Figure 14; top portion 3306) constituting the upper surface, a lower plate (Figure 14; lower portion 3306), and an interior therebetween, said upper plate (Figure 14; top portion 3306) and said lower plate (Figure 14; lower portion 3306) having pores (3362, Figure 11) wherein the liquid raw material (3101; Figure 10; column 11, lines 41-66) flows through the pores (3362, Figure 11) of the upper plate (Figure 14; top portion 3306), the interior, and the pores

(3362, Figure 11) of the lower plate (Figure 14; lower portion 3306) toward the shower plate (3502; Figure 14; column 14, lines 1-47), as claimed by claim 9

vi. The apparatus (Figure 10, 11; column 11, line 41 - column 12, line 38) as claimed in claim 9, wherein the pores (3362, Figure 11) of the upper plate (Figure 14; top portion 3306) are arranged in the vicinity of the periphery of the upper plate (Figure 14; top portion 3306), at equal intervals (see Figure 11), as claimed by claim 11

vii. The apparatus as claimed in claim 5, wherein the at least one heater (3307, 4002; Figure 11) is arranged exclusively downstream of the orifice (3601; Figure 10; column 11, lines 41-66), as claimed by claim 22

viii. The apparatus as claimed in claim 9, wherein the pores (3362; Figure 11) of the upper (Figure 14; top portion 3306) and lower (Figure 14; lower portion 3306) plates are arranged concentrically (see aligned holes in Figure 10), as claimed by claim 24

ix. a single-wafer (3005; Figure 10; column 11, lines 41-66)-processing type CVD apparatus (Figure 10, 11; column 11, line 41 - column 12, line 38) for forming a thin film on an object (3005; Figure 10; column 11, lines 41-66) to be processed, which comprises: a reaction chamber (3006; Figure 10, 14; column 11, lines 41-66), a susceptor (3004; Figure 10; column 11, lines 41-66) for placing said object (3005; Figure 10; column 11, lines 41-66) thereon, which is provided inside said reaction chamber (3006; Figure 10, 14; column 11, lines 41-66); a shower plate (3502; Figure 14; column 14, lines 1-47) for emitting a jet of reaction gas (3101; Figure 10; column 11, lines 41-66) to said object (3005; Figure 10; column 11, lines 41-66), which is disposed parallel and opposing to said susceptor (3004; Figure 10; column 11, lines 41-66) under a ceiling (Figure 14;

column 14, lines 1-47) of the reaction chamber (3006; Figure 10, 14; column 11, lines 41-66); an orifice (3601; Figure 10; column 11, lines 41-66) for bringing a liquid raw material (3101; Figure 10; column 11, lines 41-66) for deposition and a carrier gas (3002; Figure 10; column 11, lines 41-66) into said reaction chamber (3006; Figure 10, 14; column 11, lines 41-66), which is formed through a ceiling (Figure 14; column 14, lines 1-47) of said reaction chamber (3006; Figure 10, 14; column 11, lines 41-66); an evaporation plate (3306, Figure 10,11,14; column12, lines 3-59; column 14, lines 1-47) for vaporizing said liquid raw material (3101; Figure 10; column 11, lines 41-66), which is disposed downstream (Figure 10) of the orifice (3601; Figure 10; column 11, lines 41-66) and upstream of the shower plate (3502; Figure 14; column 14, lines 1-47) in a space between said ceiling (Figure 14; column 14, lines 1-47) of said reaction chamber (3006; Figure 10, 14; column 11, lines 41-66) and said shower plate (3502; Figure 14; column 14, lines 1-47) – claim 25

Hayakawa does not teach:

i. a temperature controller (4000; Figure 10; column 11, lines 41-66) for controlling said shower plate (3502; Figure 14; column 14, lines 1-47) – claim 1

ii. the vaporization surface (3361; Figure 11) having pores (3362, Figure 11) distributed exclusively in the vicinity of its outer periphery – claim 1

iii. a temperature controller (4000; Figure 10; column 11, lines 41-66) for controlling said shower plate (3502; Figure 14; column 14, lines 1-47) and said evaporation plate (3306, Figure 10,11,14; column12, lines 3-59; column 14, lines 1-47) at respective given temperatures – claim 25

iv. An evaporation plate (3306, Figure 10,11,14; column12, lines 3-59; column 14, lines 1-47) having a vaporization surface facing the ceiling of the reaction chamber (3006; Figure 10; column 11, lines 41-66), having a center under the orifice (3601; Figure 10; column 11, lines 41-66), and extending outward toward an outer periphery of the shower plate (3502; Figure 14; column 14, lines 1-47) – claim 1

v. said evaporation plate (3306, Figure 10,11,14; column12, lines 3-59; column 14, lines 1-47) having a vaporization surface which is a convex surface facing the ceiling (Figure 14; column 14, lines 1-47) of the reaction chamber (3006; Figure 10; column 11, lines 41-66), having a center under the orifice (3601; Figure 10; column 11, lines 41-66), and extending outward from the center in a downstream direction toward an outer periphery of the shower plate (3502; Figure 14; column 14, lines 1-47), said vaporization surface having pores distributed in the vicinity of its outer periphery which is disposed close to the outer periphery of the shower plate (3502; Figure 14; column 14, lines 1-47) – claim 25

vi. The apparatus (Figure 10, 11; column 11, line 41 - column 12, line 38) as claimed in claim 1, wherein a base area of said evaporation plate (3306, Figure 10,11,14; column12, lines 3-59; column 14, lines 1-47) is within the range of 80% to 120% of a base area of said space, as claimed by claim 2

vii. The apparatus (Figure 10, 11; column 11, line 41 - column 12, line 38) as claimed in claim 3, wherein the given temperature of said shower plate (3502; Figure 14; column 14, lines 1-47) is in the range of 0-50°C higher than the temperature of said evaporation plate

(3306, Figure 10,11,14; column12, lines 3-59; column 14, lines 1-47), as claimed by claim 4

viii. one or more heaters which are arranged adjacently to said evaporation plate (3306, Figure 10,11,14; column12, lines 3-59; column 14, lines 1-47) and to said shower plate (3502; Figure 14; column 14, lines 1-47), temperature detectors which are respectively linked to said evaporation plate (3306, Figure 10,11,14; column12, lines 3-59; column 14, lines 1-47) and to said shower plate (3502; Figure 14; column 14, lines 1-47), a temperature regulator which is linked to said heater, said cooler and said temperature detectors – claim 5

ix. The apparatus (Figure 10, 11; column 11, line 41 - column 12, line 38) as claimed in claim 1, which further comprises a pressure detector for detecting a pressure in a space between the ceiling (Figure 14; column 14, lines 1-47) of said reaction chamber (3006; Figure 10; column 11, lines 41-66) and said evaporation plate (3306, Figure 10,11,14; column12, lines 3-59; column 14, lines 1-47), and a pressure detector for detecting a pressure in a space between said shower plate (3502; Figure 14; column 14, lines 1-47) and said susceptor (3004; Figure 10; column 11, lines 41-66), as claimed by claim 8

x. The apparatus as claimed in Claim 9, wherein the number of the pores (3362, Figure 11) of the lower plate (Figure 14; lower portion 3306) is greater than that of the upper plate (Figure 14; top portion 3306), as claimed by claim 23

Lee teaches:

xi. and a temperature controller (120; Figure 10; column 29, lines 12-24) for controlling Lee's shower plate (122; Figure 10; column 29, lines 12-24) – claim 1

xii. one or more "cooler" (123; Figure 10; column 29, lines 12-24) which are arranged adjacently to Lee's shower plate (122; Figure 10; column 29, lines 12-24), a temperature regulator (120; Figure 10; column 29, lines 12-24) which is linked to Lee's heater (124; Figure 10), Lee's cooler (123; Figure 10; column 29, lines 12-24) – claim 5

Hayakawa and Lee do not teach Hayakawa's upper plate (Figure 14; top portion 3306) of Hayakawa's evaporation plate (3306, Figure 10,11,14; column12, lines 3-59; column 14, lines 1-47) is a conical or convex surface on which Hayakawa's liquid raw material (3101; Figure 10; column 11, lines 41-66) flows from Hayakawa's center to Hayakawa's periphery of Hayakawa's upper plate (Figure 14; top portion 3306).

Kajita teaches an vaporization surface upper plate (43a; Figure 6; column 27; lines 8-65) with conical surfaces (43a; Figure 6). Kajita further teaches an evaporation plate (43a; Figure 6; column 27; lines 8-65) having a vaporization surface (43a; Figure 6) facing the ceiling of the reaction chamber (41; Figure 6), having a center (43b) under the orifice (43c), and extending toward a periphery of the shower plate (42; Figure 6) – claim 1

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Lee's temperature control apparatus (123, 124, 120; Figure 11) to Hayakawa's showerhead plate (3502; Figure 14), including optimizing apparatus dimension, rearrangement parts, and relative process temperature of Hayakawa's evaporation plate (3306, Figure 10,11,14; column12, lines 3-59; column 14, lines 1-47) further, to add Kajita's conical vaporizer (43; Figure 6).

Motivation to add Lee's temperature control apparatus (123, 124, 120; Figure 11) to Hayakawa's showerhead plate (3502; Figure 14), including optimizing apparatus dimension, rearrangement of

parts, and relative process temperature of Hayakawa's evaporation plate (3306, Figure 10,11,14; column12, lines 3-59; column 14, lines 1-47) further, to add Kajita's conical vaporizer (43; Figure 6) is for preventing process gas from depositing upstream of the process chamber as taught by Hayakawa (column 15; lines 42-48) and to vaporize source material without impeding flow as taught by Lee (column 25; lines 55 – column 26, line 3). It is well established that changes in apparatus dimensions are within the level of ordinary skill in the art.(Gardner v. TEC Systems, Inc. , 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied , 469 U.S. 830, 225 USPQ 232 (1984); In re Rose , 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); See MPEP 2144.04).

It is well established that the rearrangement of parts is considered obvious to those of ordinary skill (In re Japikse , 181 F.2d 1019, 86 USPQ 70 (CCPA 1950); In re Kuhle , 526 F.2d 553, 188 USPQ 7 (CCPA 1975); Ex parte Chicago Rawhide Manufacturing Co. , 223 USPQ 351, 353 (Bd. Pat. App. & Inter. 1984).; MPEP 2144.04)

It would be obvious to those of ordinary skill in the art to optimize the operation of the claimed invention (In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980); In re Hoeschele , 406 F.2d 1403, 160 USPQ 809 (CCPA 1969); Merck & Co. Inc . v. Biocraft Laboratories Inc. , 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied , 493 U.S. 975 (1989); In re Kulling , 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990), MPEP 2144.05).

3. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hayakawa et al (USPat. 5,447,568), Lee; Hideki (US 5,785,796 A), Kajita; Akihiro et al. (US 5953634 A) in view of Strang, Eric J. (US 20040129217 A1). Hayakawa, Lee, and Ku are discussed above. Hayakawa, Lee, and Ku do not teach pressure detectors.

Strang teaches a pressure detector (220; Figure 7A,B) in his process gas delivery assembly (210) for measuring the pressure in process gas plenum 216.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add plural of Strang's pressure detector (220; Figure 7A,B) to Hayakawa's and Lee's corresponding gas delivery plenums.

Motivation to add plural of Strang's pressure detector (220; Figure 7A,B) to Hayakawa's and Lee's corresponding gas delivery plenums is for detecting a pressure change in the process gas delivery and controlling the gas delivery in response thereof as taught by Strang (abstract).

***Response to Arguments***

4. Applicant's arguments with respect to claims 1-11, and 22-25 have been considered but are moot in view of the new grounds of rejection.

5. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the Examiner has cited teaching, suggestion, and motivation to combine the reference found in the references themselves and in the knowledge generally available to one of ordinary skill in the art. In particular, the Examiner stated that motivation for the combination is for preventing process gas from depositing upstream of the process chamber as taught by Hayakawa (column 15; lines 42-48) and to vaporize source material without impeding flow as

taught by Lee (column 25; lines 55 – column 26, line 3). As a result, the Examiner has identified motivation, found in the art, suggesting to a skilled artisan the benefits for such a combination. This is supported by the fact that all of Hayakawa, Kajita, and Lee each either vaporize their precursor sources or are concerned with precipitation of said precursor sources and thus are mutually interested in improving deposition apparatus utilizing vaporization sources or preventing condensation upstream of the process.

6. Applicant believes the Examiner's statement of obviousness to optimize the dimension of Hayakawa's evaporation plate (3306, Figure 10,11,14; column12, lines 3-59; column 14, lines 1-47) in the geometry taught by Kajita's vaporization surface upper plate (43a; Figure 6; column 27; lines 8-65) with conical surfaces (43a; Figure 6) "would render the prior art invention being modified unsatisfactorily for its intended purpose". The Examiner disagrees. In fact, Kajita's conical vaporization surface upper plate (43a; Figure 6; column 27; lines 8-65) is so formed so as to have a large surface area ("optimize the dimension") for increasing vaporization as taught by Kajita (column 26, lines 55-67).

7. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "With respect to Applicant's argument that Kajita's evaporation plate "is convex toward the showerplate, not toward the bottom", ") are not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

8. The remainder of Applicant's arguments are centered on the claim amendments filed herewith. Applicant is direct to the above new grounds of rejections as necessitated by the amendment filed herewith.

***Conclusion***

9. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (571) 273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner

can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.